



Florida Department of Transportation

JEB BUSH
GOVERNOR

THOMAS F. BARRY, JR.
SECRETARY

District Six Environmental Management Office
1000 N.W. 111 Avenue, Room 6101
Miami, Florida 33172

May 7, 1999

Richard Bonner, Deputy District Engineer for Project Management
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Mr. Bonner:

This is in response to your April 16, 1999 letter received April 22, 1999 regarding the Tamiami Trail project feature of the U.S. Army Corps of Engineers' (the "Corps") Modified Water Deliveries to Everglades National Park Project.

Since our February 23, 1999 meeting with your staff, a coordination team has been established within the Florida Department of Transportation (the "Department") to assist in reviewing alternatives and plans developed for this project. A list of team members along with their responsibilities and contact information is attached. A number of these team members met to discuss your most recent letter and have assembled the information provided below. The information in this letter is divided into two parts: the first part contains general comments regarding the project, and the second part contains specific responses to questions raised in your letter.

General Comments

We were concerned to read in your letter that your process is on hold pending information from our agency, since your staff stated at the conclusion of our February 23rd meeting that they would proceed with additional alternatives analysis through March and early April, and subsequently provide that information to the Department for review. As we committed in the February meeting, our Traffic Operations Division proceeded with obtaining all traffic Level of Service (LOS) and crash data for this portion of Tamiami Trail and performed a detailed analysis of this data in order to determine the possible need for four-laning of the roadway or for provision of a median separator. That work was completed April 26, 1999 and the results are provided below.

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As expressed at the February 23rd meeting and in our July 31, 1998 teleconference with your staff, we are concerned about the level of major engineering and environmental work involved in developing and analyzing the alternatives for this project, particularly given the ambitious schedule for project implementation. We wish to reiterate our recommendation made in last summer's teleconference that the Corps hire a qualified consulting firm with expertise in transportation engineering and environmental analysis to perform the substantial work involved in developing the project alternatives. While the Department's coordination team can assist with review of alternatives and plans, and serve as a source of information and contacts, we feel that a dedicated consultant team is essential to completing the substantial work involved in developing and designing this project within the established schedule. To that end, we are providing a list of consulting firms which are prequalified by the Department to perform Project Development and Environmental (PD&E) (i.e., National Environmental Policy Act [NEPA]) alternatives analysis studies and prepare project master plans. This is in addition to the attached list of Department-prequalified Final Design firms, which your staff requested at our February 23rd meeting. One advantageous approach would be to consider hiring a single firm qualified not only in PD&E and Final Design, but Construction, Engineering and Inspection (CEI) work as well, since a CEI firm will be needed to inspect the construction contractor's work. In addition, due to the project length, you should consider dividing the project construction into two or three segments in order to expedite this phase by utilizing multiple contractors.

As discussed in February, part of the difficulty in responding to your staff's request for all the environmental, water quality, and design considerations which would need to be incorporated into this project lies in the fact that the decision of which agency (s) will design, construct and fund this project, and which specific funding types will be utilized, has not yet been decided. For example, if the ACOE were to construct and fund this project using Department of Interior (DOI) funds, we do not believe that Section 4 (f) [Title 49 U.S.C., Section 1653(f), as amended in 1983 and codified as 49 U.S.C. Section 303] would apply, as it only applies to agencies within the U.S. Department of Transportation. We do feel that a final legal determination of this issue needs to be made since a U.S. highway is involved, and therefore we will request such a determination and will forward the opinion to you separately. If any FHWA funds were utilized at any stage of this project, however (design, construction, right-of-way acquisition, etc.), Section 4(f) would apply. This includes the potential for direct permanent Section 4(f) impacts, temporary Section 4(f) impacts due to Maintenance of Traffic (MOT) or other construction activities, indirect impacts through changes in access to Section 4(f) lands, and Constructive Use Section 4(f). Section 4(f) lands in the area include Everglades National Park and possibly other publicly owned recreation areas, wildlife or waterfowl refuges, or archaeological or historic sites identified as part of a comprehensive archaeological and cultural resource survey. In any case, you should be aware that if Section 4(f) were determined to apply, it could substantially affect the project's MOT plans, and consequently the preferred alternative alignment, as well as the

Talk to J. Schaeffer

project schedule.

Similarly, other processes, procedures and permitting requirements may apply if this project is designed and constructed by the Department, which may not apply to a Corps-designed and -constructed facility on our right-of-way. Consequently it is difficult to insure a complete list of all issues and design considerations which should be addressed for this project. For comparison purposes, based on our knowledge of the proposed improvements planned thus far, the standard process which the Department would follow in developing this project would include, at a minimum, the following:

1. Project Development and Environmental Study Phase

- Project scoping phase.
- Development of detailed project schedule and Public Involvement Plan (PIP).
- Advanced Notification Package to applicable agencies, organizations and elected officials.
- Engineering and Environmental data collection & analysis; detailed field surveys for endangered species, wetlands impacts, right-of-way impacts, cultural resource surveys, etc.
- NEPA alternatives analysis, interagency coordination (including required Endangered Species Act [ESA] Section Seven consultation with the U.S. Fish and Wildlife Service [USFWS]; coordination with the State Historic Preservation Officer [SHPO], etc.)
- Development of engineering masterplans for various alternatives.
- Preparation of draft Preliminary Engineering Report (PER) and required environmental documents.
- Public notice and public involvement (public workshops; public hearing).
- Selection of preferred alternative.
- Document revision, completion, circulation and approval.

2. Final Design Phase

- Development of detailed roadway and drainage design plans based on the preferred NEPA alternative.
- Structural design of retaining walls, bridges, etc., if any.
- Utility coordination.
- Right-of-way acquisition; acquisition of construction easements.
- Additional public involvement as warranted.
- Environmental document reevaluation and update.
- Regulatory permitting.
- Preparation of Technical Special Provisions (TSP's) for inclusion in contract documents.
- Plans circulation and review.
- Construction cost estimating.

3. Construction Phase

- Contractor bidding, contract letting and negotiations.
- Contractor mobilization.
- Potential utility relocation.
- Implementation of MOT plans.
- Project construction and inspection.
- Potential restoration of MOT area.
- Wetlands mitigation construction.

Based on the above process, we estimate that with the use of prequalified consulting firms experienced in transportation Project Development and Final Design, and assuming major modifications to the entire 10-mile project area, an accelerated schedule for completion of both the Project Development and Final Design Phases would be two years each, and an accelerated Construction Phase would take approximately two years, for a total of six years. This assumes that the basic type of improvements needed (bridges, culverts, roadway elevation, or some combination of all three) has already been established in the planning phase (i.e., prior to the Project Development Phase). It also does not allow time for consultant selection and contract negotiation, although in the case of Final Design and CEI consultant selection, this process can be performed simultaneously with other project work, in advance of these phases.

As mentioned by your staff in the February 23rd meeting, the Corps may have different processes or permitting requirements which are less restrictive than those followed by the Department. For purposes of responding to your questions, the information provided below is based on what we believe would be the minimum Project Development, environmental, water quality and pavement design considerations, which would apply, regardless of funding or agency involvement.

Response to Questions

1) Waiver request by the Corps to reduce the two-foot base clearance requirement to a one-foot base clearance requirement:

The base clearance may be reduced from two feet to one foot for purposes of conceptual alternative development. This clearance will be measured from the design high water elevation to the bottom of the base at the outside edge of shoulder. The clearance reduction is predicated on the use of black base (i.e., asphalt, which is more resistant to flooding than a lime rock base). The design high water elevation needs to be established for each conceptual alternative. For purposes of determining roadway profile grades and pavement layer clearances the design high water will be the expected water elevation resulting from a 75 year recurrence interval, or approximately 4,000 cubic feet per second (cfs). As your staff discussed in the February 23rd meeting, they anticipate a 4,000 cfs flow event, flooding the roadway base for two to three days

at a time, which exceeds the Department's 24 hour criteria. The base clearance will be reevaluated for the recommended design alternative prior to final approval. If the clearance can be reasonably increased, up to the desirable clearance, with minimal economic and/or environmental impacts, you may be asked to review the design to provide increased clearance.

2) Information regarding Level of Service (LOS) requirements to be considered in the Corps' modification plans for Tamiami Trail, in order to satisfy Department standards:

As mentioned above, since our February 23rd meeting, the Department's Traffic Operations Division has been evaluating crash data, roadway safety characteristics and future traffic LOS projections for this roadway in order to ascertain the need for possible four-laning or a median barrier to improve safety. It has been determined that neither a four-lane road nor a median barrier is needed for capacity or safety reasons. In addition, although Tamiami Trail is four-laned east of Krome Avenue, since four-laning is not necessary within this project's limits, we do not believe extensive improvements (i.e., widening) would be needed to the one-mile segment between Krome Avenue and eastern limit of this project. However, if, for hydrologic reasons, the elevated portion of Tamiami Trail must begin one mile west of Krome Avenue with no transition, then minor improvements within the one-mile segment between Krome and this project may be needed for transitional purposes. The same modifications would apply to the western limit of this project. Therefore the actual project limits may need to be adjusted to include both the 10-mile elevated portion of the roadway, and some additional area on either side of the elevated roadway in order to transition to the adjacent lower roadway elevations. Tamiami Trail must be reconstructed in kind, or meeting current minimum safety standards, whichever is the higher standard. The roadway typical section should provide one 12-foot travel lane in each direction with eight-foot shoulders on each side of the roadway. A minimum of five feet of the shoulder must be paved. Guardrail on both sides of the roadway, similar to the existing condition, will most likely be necessary. Where barrier wall is used rather than guardrail, a 10-foot paved shoulder is required from edge of pavement to the toe of the barrier wall. The cross section needs to be designed to accommodate the guardrail which needs to be located two feet from the outside edge of the shoulder to the front face of the rail.

The enclosed pavement design sheet is based on having the proposed alignment (i.e., footprint) in exactly the same location as the existing. It proposes to use the structural number (SN) of the existing roadway plus a minimum of four inches of Type S asphalt which may vary up to a 12.4 inch thickness. Added to this would be a two-inch thick structural course (shown as "SP" on the attached pavement design sheet) and finally a ¾-inch thick friction course. However, the entire friction course of the existing roadway would have to be milled (one inch) before the proposed layers are placed. If there is a need to realign the roadway (i.e., shift it's existing location), this pavement design could not be used. A different design somewhat more expensive would then have to be prepared.

Based on the design high water elevation provided by the Corps of 9.5 feet NGVD (derived from the occasional 4,000 cfs flow), a minimum profile grade elevation at the roadway crown of 12 feet would be required.

3) Request by the Corps to use black base at a one-foot thickness instead of lime rock at a two-foot thickness) as a subgrade material in alternatives developed for Tamiami Trail:
As we discussed in the February 23rd meeting, the use of black base is acceptable, although typically more expensive than lime rock. The pavement design above is based on the use of black base and a one-foot clearance from its bottom to the design high water elevation.

4) Waiver request by the Corps to reduce the two-foot bridge drift clearance to a one-foot bridge drift clearance:

We concur in the reduction of the bridge drift clearance from two feet to one foot for purposes of conceptual alternative development. This clearance will be measured from the design high water elevation to the bottom of the lowest superstructure member. The design high water elevation needs to be established for each conceptual alternative. For the purposes of determining bridge clearances and openings the design high water will be the expected water elevation resulting from a 75 year recurrence interval (4,000 cfs flow). This reduction does not account for any clearance requirements that may be imposed by the South Florida Water Management District (SFWMD). The bridge drift clearance will be reevaluated for the recommended design alternative prior to final approval. The expected water velocity and the potential for debris impacting the superstructure will be part of the evaluation of the recommended design. If the clearance can be reasonably increased, up to the desirable clearance, with minimal economic and/or environmental impacts, you may be asked to review the design to provide increased clearance.

Since bridge drift clearance standards must be approved in this case by both the Department and the SFWMD, we recommend you contact SFWMD for their opinion. For preliminary considerations, as long as the velocity in the canal during the maximum design flow event at the proposed bridge location is at or under 2.5 feet per second (fps), and the type of floating debris does not cause damage to the lowest member elevation of the bridge structure, then the request may be considered for a waiver by the Department. It should also be noted, however, that the other vertical clearance which must be met is the six-foot navigation vertical clearance necessary for maintenance of the canal and the bridge structure. This six-foot vertical clearance should be above the normal water surface elevation, or the October ground water elevation.

Please reference the enclosed typical section demonstrating bridge drift clearance.

5) Request by the Corps that the Department accept overtopping of Tamiami Trail during a 1 in 500-year flow event:

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Overtopping of Tamiami Trail is allowable in extreme events. Our design standards require that the cross drains (bridges and culverts) accommodate the flows expected on a 75 year recurrence interval (4,000 cfs flow). For each design alternative developed, please identify the recurrence interval that will result in an encroachment of water onto the travel lanes of the highway, and the expected duration of the encroachment.

Responses to additional questions in your letter are provided below:

6) Environmental requirements which would need to be considered in the development of the plan for modification of Tamiami Trail:

At a minimum, all standard NEPA requirements should be included in the alternatives evaluation. This includes the following:

a) Social Impacts

1. Land Use Changes
2. Relocation Potential (including business sign relocations and other impacts to adjacent business)
3. Community Services
4. Title VI Considerations
5. Controversy Potential
6. Utilities

b) Cultural Impacts

1. Section 4(f) Lands
2. Historic Sites
3. Archaeological Sites

c) Natural Environment

1. Wetlands (direct and secondary impacts and benefits)
2. Water Quality (direct and secondary impacts and benefits)
3. Floodplains
4. Wildlife and Habitat (direct and secondary impacts and benefits)
5. Farmlands

d) Physical Impacts

1. Noise
2. Air
3. Construction
4. Contamination
5. Navigation

Endangered Species; Wetlands Assessment:

A full Endangered Species survey is needed, including a survey for endangered and threatened plants by a qualified botanist trained to recognize and identify such plants, and one survey for

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endangered fauna. While it is understood that the USFWS's Biological Opinion has recommended this project as potential enhancement for the endangered Cape Sable Seaside sparrow, this project has the potential to affect other species. A systematic endangered species survey and evaluation for each NEPA alternative will be needed in order to coordinate the preferred design with the USFWS under ESA Section Seven consultation. This analysis should include both temporary impacts (from MOT, construction noise disrupting nesting birds, etc.) and permanent impacts, as well as direct (within the project footprint) and secondary (outside the project footprint) impacts. A similar analysis is needed to assess the amount of wetland impacts resulting from this project. Again, while it is recognized that this project is expected to enhance wetlands beyond the project area, direct wetlands impacts from this project could be substantial. A systematic field evaluation of the acreage, type and condition of all temporary and permanent wetlands impacts, as well as an analysis of the type, amount and present condition of wetlands to be enhanced as a result of the project, will be needed. This will insure a systematic comparison so that no net loss of wetlands occurs, in accordance with Presidential Executive Order 11990 dated May 23, 1977. It will also insure that any needed mitigation can be planned for as early as possible. The wetlands assessment will also provide important information which will be needed in the evaluation of project impacts to endangered and threatened species within, or migrating through, the area.

Contamination Assessment:

A Phase I contamination impact assessment which considers adjacent properties should be performed as part of the alternative analysis process, however it does not appear from a cursory review of the project area that the potential exists for substantial contamination impacts. Any contaminated soil disrupted by roadway construction must not be exacerbated and must be remediated during construction by a qualified contamination remediation contractor. TSP's for handling this material should be included in the construction contract documents prior to contract letting.

Public Involvement; Canal and Adjacent Property Access Issues:

A Public Involvement Plan which identifies all potentially affected parties, including affected property owners and those who access the area for recreational purposes, as well as the motoring public, is suggested. There is potential to affect recreational access usage of Canal L-29, and adjacent property access, either through elevation of Tamiami Trail, or the possible need to construct retaining walls (see water quality discussion below) or relocate guardrail. Any changes in recreational access will need to be coordinated with the SFWMD and the public. In addition, any access changes which affect the SFWMD's ability to perform either routine or emergency (post-hurricane) maintenance of Canal L-29 will need to be coordinated with the SFWMD's Maintenance Division. Access to adjacent properties may be affected if the roadway is elevated, or if retaining walls must be built due to right-of-way restrictions. At a minimum, this would require easements to perform driveway harmonization during construction, and may require

right-of-way acquisition (see water quality discussion below).

Cultural Resource Assessment:

As mentioned above, a detailed archaeological and historical survey should be made by a qualified firm approved by the SHPO, and the results of the survey coordinated and addressed with the SHPO.

Permits:

Permits which need to be obtained, at a minimum, include federal and state dredge and fill permits from the appropriate agencies, a Department of Transportation permit authorizing the roadway-modifications, and a SFWMD Right-of-Way Occupancy permit for any permanent or temporary impacts to their right-of-way. Other permits, such as the DERM Class II (drainage system) or state issued (Florida Department of Environmental Protection [FDEP] or SFWMD) drainage permit may be needed.

Utilities:

We are aware of at least one buried telephone fiber optic line adjacent to Tamiami Trail within our right-of-way. If the roadway is elevated on the same footprint as the existing facility, it will probably not be necessary for the utility to relocate this line. However, construction of MOT facilities (e.g., temporary roads), or construction of culverts or bridges under the roadway have the potential to affect this line. Other utilities may be within or adjacent to the right-of-way. A full investigation of all utilities in the area must be performed as required by Florida Statutes, and impacts coordinated with the utility companies and the Department. If needed, the Department can assist you with information on which utility companies you should contact.

As mentioned above in the General Comments, the above list of environmental concerns should not be considered all-inclusive. Once the proposed improvements (elevation, bridges, culverts, etc.) have been established, additional project scoping and a complete field review should be performed in order to determine all environmental considerations for this project.

7) Water quality / drainage requirements which would need to be considered in the development of the plan for modification of Tamiami Trail:

Drainage must be provided for in the reconstruction of this portion of Tamiami Trail. The drainage facilities should be designed based on a three-year design storm frequency to convey the water. From the water quality standpoint, this facility should be designed based on a five-year design storm frequency, zone 10 or the equivalent 10-year storm frequency curves of Miami-Dade County. Pollution control structures must be designed accordingly prior to an overflow discharge. Two types of different systems might be utilized for this facility. The first is drainage swales with rock trenches at the bottom of the swales working as french drains, and the second is a french drain system where applicable. Since this road carries a rural

classification, roadside swales would be preferable and less expensive. However if right-of-way constraints, such as the need to avoid impact to Everglades National Park, or restraints on the north side of the roadway adjacent to the canal, result in inadequate right-of-way to meet the requirements of the 8 foot shoulder and roadside swales, some other drainage system will have to be designed. Drainage systems such as collection and piping of stormwater to swale areas, or the installation of french drains, will add to project costs. Additional right-of-way may be needed to accommodate the drainage system, which will also add to cost and could substantially affect the project schedule. For these reasons, drainage requirements should be addressed as early as possible.

Treatment requirements are, of course, set by the applicable regulatory agency. The Department typically obtains its drainage permits from Miami-Dade County's Department of Environmental Resources Management (DERM) under its state-delegated program, except in the case of large projects (over 40 acres of impervious area), in which case a drainage permit is obtained from the SFWMD. Typically we are required to provide treatment for the first one inch of roadway runoff. Specific water quality treatment requirements for this project would be set by the appropriate permitting agency (the FDEP, SFWMD or DERM).

8) Maps showing the Department's right-of-way for Tamiami Trail between Krome Avenue and water control structure S-333:

Copies of FDOT right-of-way maps for this portion of Tamiami Trail are enclosed. If you have any question regarding these maps please contact Arturo Toriac of our Right-of-Way Engineering Office at (305) 470-5195.

9) Status update on the resolution of ownership on some portion(s) of Tamiami Trail between the Department and the SFWMD:

The Department has received Tamiami Trail right-of-way maps, deeds and other documents from the SFWMD, and is presently comparing them with Department right-of-way maintenance maps to identify conflict areas. Mrs. Betty Blackman of the SFWMD has indicated that once the Department defines its corridor and determines the extent of the conflict areas, the SFWMD will consider the appropriate resolution of this issue. We are working steadily on this issue and hope to resolve it within the next two to three months. We will notify you when it is resolved or, alternatively, keep you informed of our progress.

In addition to the information presented here, the Corps should contact our Maps and Publications Office in Tallahassee at (850) 414-4915 for copies of several Department manuals which should be utilized in developing this project. These include the Project Development and Environment Manual, the Drainage Manual, the Plans Preparation Manual, the Roadway and Traffic Design Standards Manual.

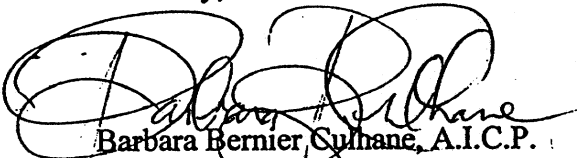
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I hope this information is informative and helpful. It is emphasized that all environmental and engineering considerations should be studied thoroughly and weighed early in the process, prior to completion of the NEPA document, and not during a later detailed design phase, since many of the above listed items have the potential to affect the selected NEPA alternative. This will prevent serious delays later in the process as final design plans are developed.

We would like to request that the Corps provide as soon as possible a detailed written project schedule which includes all milestone activities (hydrologic modeling, alternatives analysis, interagency coordination, public involvement, document preparation and approval, final design, construction, etc.).

If you have any questions regarding the enclosed information, please call me at (305) 470-5220. We look forward to continuing to work with you on this very important project.

Sincerely,



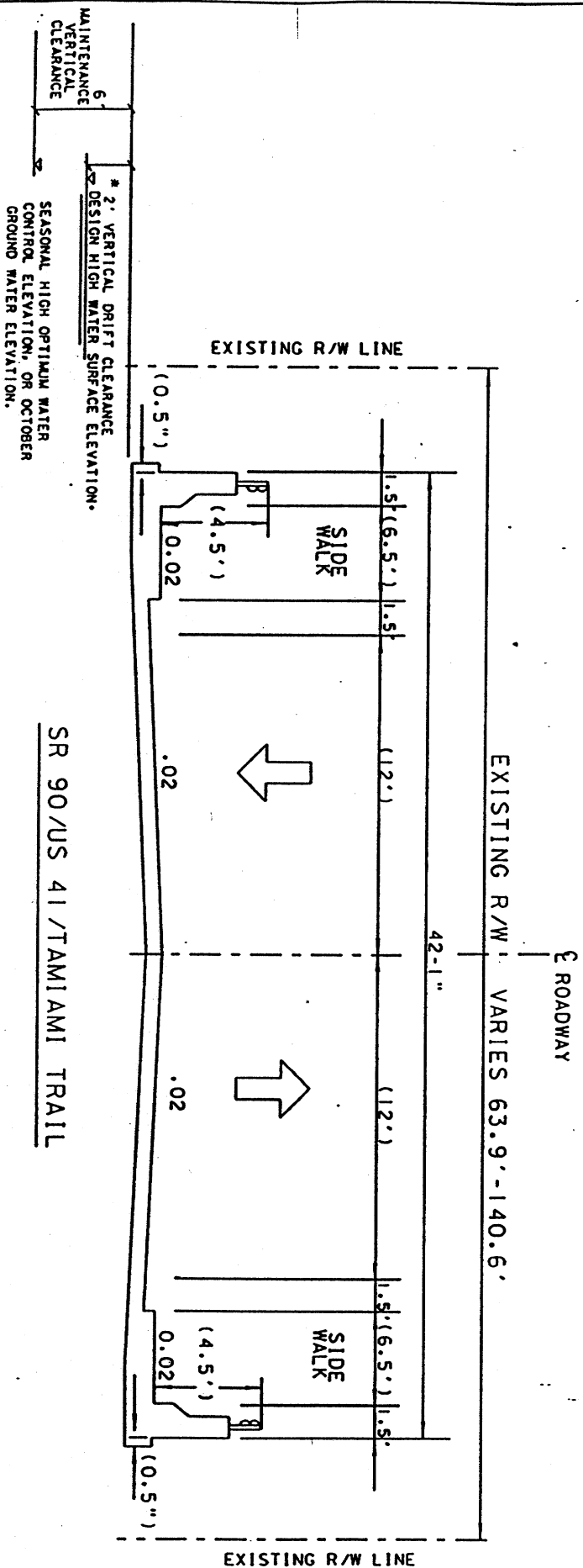
Barbara Bernier Culhane, A.I.C.P.
District Environmental Administrator

cc: Joe Miller, ACOE Jacksonville, District Engineer
Leroy Irwin, FDOT Tallahassee, Manager, Central Environmental Management Office
Jose Abreu, FDOT Miami, District Secretary
John Martinez, FDOT Miami, District Director of Production
Mike Ciscar, FDOT Miami, District Environmental Management Engineer

Florida Department of Transportation
 Coordination Team Members
 for the U.S. Army Corps of Engineers
 Modified Water Deliveries Project / Tamiami Trail Modifications

Name/Title	Address	Phone	Fax
Barbara Culhane, A.I.C.P., District Environmental Administrator FDOT Project Coordinator	Florida Department of Transportation District Six 1000 N.W. 111 Avenue, Room 6101 Miami, Florida 33172	(305) 470-5220	(305) 499-2308
Marjorie Bixby, Environmental Manager environmental impact review; National Environmental Policy Act (NEPA) document review; project coordination documentation.	Florida Department of Transportation District Six 1000 N.W. 111 Avenue, Room 6101 Miami, Florida 33172	(305) 470-5229	(305) 499-2308
Jorge Frases, P.E., Senior Project Manager roadway design issues; Project Development issues; typical section, traffic safety and Level of Service issues.	Florida Department of Transportation District Six 1000 N.W. 111 Avenue, Room 6103 Miami, Florida 33172	(305) 470-5305	(305) 470-5205
Ricardo Salazar, P.E. District Drainage Engineer storm water treatment issues; roadway elevation issues.	Florida Department of Transportation District Six 1000 N.W. 111 Avenue, Room 6218 Miami, Florida 33172	(305) 470-5264	(305) 470-5293
Reinaldo Carvajal, P.E. Drainage Engineer storm water treatment issues; roadway elevation issues; hydrology issues.	Florida Department of Transportation District Six 1000 N.W. 111 Avenue, Room 6218 Miami, Florida 33172	(305) 470-5251	(305) 470-5293
Roberto Perez, P.E. Pavement Design Engineer roadway and pavement design issues.	Florida Department of Transportation District Six 1000 N.W. 111 Avenue, Room 6111 Miami, Florida 33172	(305) 470-5266	(305) 470-5338

Melanie Calvo, District Permits Coordinator regulatory permitting issues; wetlands impact issues.	Florida Department of Transportation District Six 1000 N.W. 111 Avenue, Room 6101 Miami, Florida 33172	(305) 470-5223	(305) 499-2308
Susan Day, Assistant Right-of-Way Manager right-of-way acquisition; right-of-way impact issues.	Florida Department of Transportation District Six 1000 N.W. 111 Avenue, Room 6118 Miami, Florida 33172	(305) 470-5169	(305) 470-5564
James McGetrick, P.E. District Utilities Engineer utility issues.	Florida Department of Transportation District Six 1000 N.W. 111 Avenue, Room 6218 Miami, Florida 33172	(305) 470-5231	(305) 470-5293
Charles Newton, District Traffic Maintenance Engineer Maintenance Of Traffic (MOT) issues.	Florida Department of Transportation District Six 1000 N.W. 111 Avenue, Room 6202 Miami, Florida 33172	(305) 470-5344	(305) 470-5815
Mikhail Dubrovsky, P.E. Construction Plans Review Engineer constructibility issues.	Florida Department of Transportation District Six Construction Office 1000 N.W. 111 Avenue Miami, Florida 33172	(305) 499-2354	(305) 499-2351
Robert Crim, P.E., State Project Development Engineer Central Office project coordinator; Project Development issues; design issues.	Florida Department of Transportation Central Environmental Mgmt. Office 2740 Centerview Drive, Suite 3C Tallahassee, Florida 32399-2100	(850) 487-3985	(850) 922-7217
David Miro, P.E. Districts Four and Six Geotechnical Engineer geotechnical issues.	Florida Department of Transportation District Materials Office 14200 West S.R. 84 Davie, Florida 33325	(954) 475-4102	(954) 475-4119



* VERTICAL DRIFT CLEARANCE
MAY BE REDUCED TO 1' IF
S.F.W.M.D. AGREES WITH THIS
WAIVER REQUEST.

SR 90/US 41/TAMIAMI TRAIL

SR 90 - US 41 - TAMIAMI TRAIL

FIGURE NO.

1

FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET
Preliminary , subject to change

Prepared by: Roberto Perez

Date: May 6, 1999

W.P.I. No. _____

SR/90/US41/Tamiami Trial

State Project No. 87110-

From 11 miles w of SR 997

F.A.P. No. _____

To SR 997/Krome Ave

County Miami-Dade

Project Length 11 miles

Opening Year 2002

LBR 40 SSV ---

Design Year 2022

Mr 84 Mpa

80 KN/eq.Loads 3,100,000

%Reliability 90

SN Required 3.45

Design Speed 55 MPH

Type of Work and location: Reconstruction (Existing Profile varies from 10.3 to 12.0 Ft NGVD, Prop. Profile will be at 12.0 Ft NGVD)
Existing Pavement:

	Tk.	Coef.	SN
Sub-grade Stabilization (LBR 40)	12"	0.08	0.96
Limerock Base 12" tk.	12"	0.18	2.16
Type S Asphaltic Conc. 3.5" tk	3.5"	0.25	0.87
FC-2, Friction Course 5/8"tk	5/8"	0.00	0.00
			3.99

Prop. Profile Grade :

9.50 (DHW)+1ft Clearence+1.5 ft(Pav't tk.+cross slope=12.0 Ft NGVD
It means raise the Road from 0 to (12.0-10.3) 1.7 Ft= 20.4 inches

Prop. Pavement:

Mill FC-2, entire corridor

	SN
Existing pavement	3.99
Type S overbuild(4" to 12.4") (400 to 1240 lb/sy)	0.00
OBG 9 *	1.80
Type 'SP' Struct.Cse.(Level 3) 2" tk	0.44
FC5-Friction Course, (80lb/sy), 3/4"tk	0.00
	0.00
Design SN	6.67

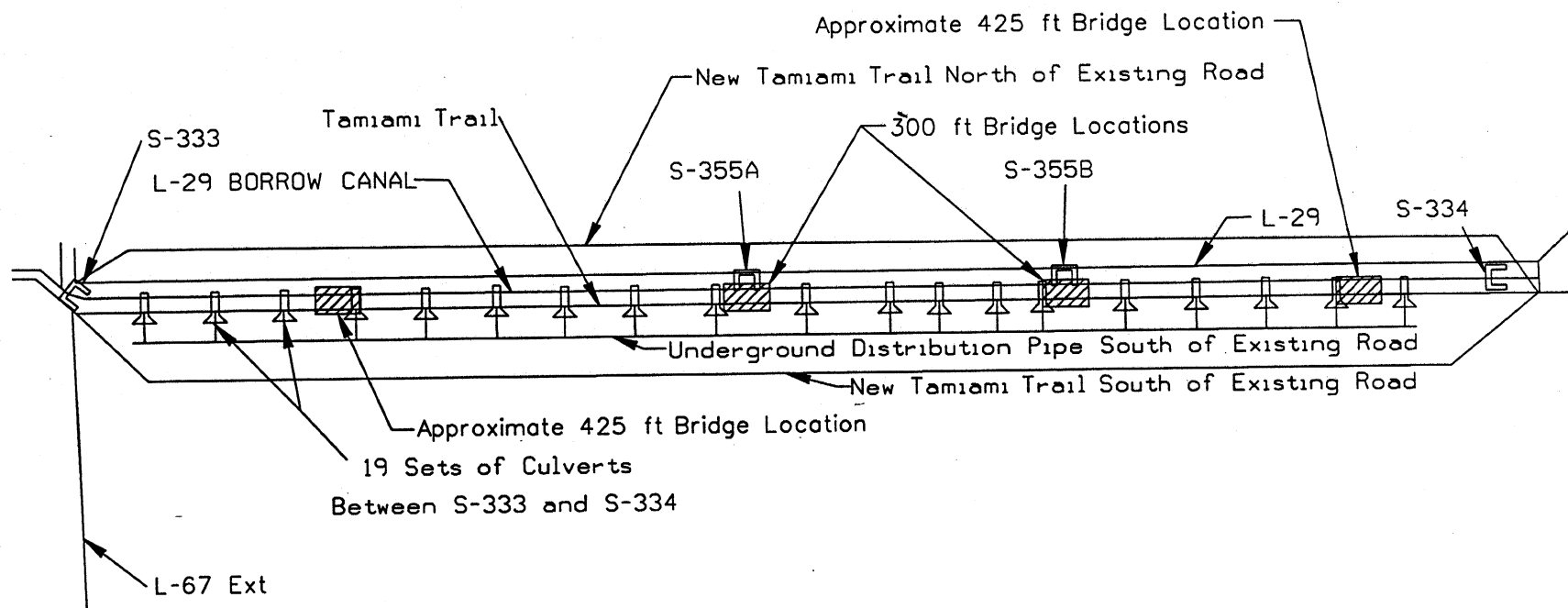
*Optional code permite 609 (6"ABC-3)

Approved by: [Signature]
Pav.Des.Eng

Date : 5-6-99

Concurred By: [Signature]
Dist.Des.Eng.

Date: 5-6-99



Not To Scale

ENCLOSURE
2

Central and Southern Florida Project
Modified Water Deliveries to Everglades National Park
Tamiami Trail
Alternatives

File name:
ENCL2.DGN
Reference files:
dm8.5x11.DGN

Designed by:

Dwn by: T.L.F.
Ckd by: J.Z.

Dated: 29 January 1999

D.O. FILE NO.

Scale: Not To Scale
Plot date: 29 January 1999
Plot scale: 7,000:1

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA



US Army Corps
of Engineers
Jacksonville District